CLAIMS

1. A positive active material which comprises: base particles able to dope and release lithium ions; and an element in Group 3 of the periodic table present on at least part of that part of the base particles which is able to come into contact with an electrolyte.

2. The positive active material of claim 1, wherein the element in Group 3 is present as a chalcogen compound.

3. The positive active material of claim 1, wherein the element in Group 3 is present as an oxygen-containing compound.

4. The positive active material of any one of claims 1 to 3, wherein the base particles are $LiCoO_2$.

5. The positive active material of any one of claims 1 to 3, wherein the base particles are a lithium-transition metal composite oxide having an α-$NaFeO_2$ type crystal structure and represented by the composite formula $Li_xMn_aNi_bCo_cO_d$ (wherein $0 \leq x \leq 1.3$, $a+b+c=1$, $|a-b| \leq 0.03$, $0 \leq c < 1$, and $1.7 \leq d \leq 2.3$).

6. A process for producing the positive active material of

any one of claims 1 to 3, which comprises: producing base particles which contain lithium and are able to dope and release lithium ions; and then imparting an element in Group 3 of the periodic table to the base particles so that the element can be present on at least part of that part of the base particles which is able to come into contact with an electrolyte.

7. A process for producing the positive active material of any one of claims 1 to 3, which comprises: producing base particles which contain lithium and are able to dope and release lithium ions; and then mixing a solution which contains the base particles and the pH of which has been regulated by the addition of a lithium ion-containing alkalinity regulator with a "deposition reaction liquid" containing an element in Group 3 of the periodic table to thereby deposit a compound containing the Group 3 element on the base particles in the solution and impart the Group 3 element to the base particles so that the Group 3 element can be present on at least part of that part of the base particles which is able to come into contact with an electrolyte.

8. The process for producing a positive active material of claim 7, wherein the solution has been regulated so as to have a pH of 11-12 by the addition of the lithium ion-

containing alkalinity regulator.

9. The process for producing a positive active material of claim 7, wherein the lithium ion-containing alkalinity regulator is an aqueous lithium hydroxide solution.

10. The process for producing a positive active material of claim 6, which comprises producing the base particles, subsequently depositing a compound containing the Group 3 element on at least part of that part of the base particles which is able to come into contact with an electrolyte, and then subjecting the base particles to a heat treatment.

11. The process for producing a positive active material of claim 10, wherein the deposition of the compound is conducted in a solution.

12. The process for producing a positive active material of claim 10, wherein the base particles are produced through a step including a heat treatment, and the heat treatment of the base particles on which a compound containing the Group 3 element has been deposited is conducted at a lower temperature than in the heat treatment in the production of the base particles.

13. A positive electrode for lithium secondary batteries

which contains the positive active material of any one of claims 1 to 3.

14. A lithium secondary battery which has the positive electrode for lithium secondary batteries of claim 13, a negative electrode employing a negative-electrode material able to dope and undope lithium ions, and a non-aqueous electrolyte.

15. The lithium secondary battery of claim 14, which is for use at an upper-limit voltage of 4.3 V or higher.

16. The lithium secondary battery of claim 15, characterized in that the negative electrode contains a carbon material and employs the negative active material so that the electrochemical capacity of the lithium ions able to be doped by the negative active material is from 1.05 times to less than 1.50 times the electrochemical capacity of the lithium ions able to be released by the positive electrode when the battery is used at the upper-limit voltage.